UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte PETER HEINRICH, HEINRICH KREYE and ERICH MUEHLBERGER

Appeal No. 2006-1096
Application No. 10/453,872

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ON BRIEF

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Before KIMLIN, WARREN and WALTZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-5, 8-11, and 15-18. Claim 1 is illustrative:

> 1. A process for producing a coating on a work piece or a molding by a cold gas spraying process, comprising releasing a carrier gas in a cold gas spray gun and accelerating the spray particles to a velocity sufficient to raise the temperature of the particles so that the particles adhere to the work piece/molding, wherein the cold gas spraying process is carried out at a pressure below 800 mbar.

The examiner relies upon the following references as evidence of obviousness:

Alkhimov et al. (Alkhimov) 5,302,414 Apr. 12, 1994
Eidelman 2003/0207042 A1 Nov. 6, 2003

Amateau et al. (Amateau), "High-Velocity Particle Consolidation Technology," iMAST Quarterly 2000, pp. 3-4 (Vol. 2, Penn State, 2000).

Appellants' claimed invention is directed to a process for producing a coating on a work piece by a cold gas spraying process wherein the process is carried out at a pressure below 800 mbar. According to appellants, "[b]y virtue of conducting the process in a vacuum, substantially less carrier gas e.g. helium, can be used . . . and the instant process substantially diminishes a 'braking' effect otherwise resulting from the use of ambient air" (page 2 of principal brief, third paragraph). Also, by reducing the consumption of carrier gas, it is "possible to select the carrier gas according to its properties and not according to its economical availability" (page 3 of specification, third paragraph).

Appealed claims 1-5, 8-10 and 15-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Amateau in view of Eidelman. Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the stated combination of references further in view of Alkhimov.

We have thoroughly reviewed each of appellants' arguments for patentability. However, we fully concur with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of Section 103 in view of the applied prior art. Accordingly, we will sustain the examiner's rejections for essentially those reasons expressed in the answer and we add the following primarily for emphasis.

Appellants acknowledge that Amateau discloses a process for producing a coating on a work piece by a cold spraying process wherein a carrier gas is released in a cold gas spray gun and spray particles are accelerated toward the work piece. As acknowledged by the examiner, Amateau does not teach that the cold gas spraying process is carried out under the claimed vacuum conditions. However, there is no dispute that Eidelman teaches a thermal spray coating process conducted under vacuum conditions for the purpose of generating higher particle acceleration and velocities and improving coating quality. Eidelman also teaches that a key advantage of employing vacuum conditions is the effective removal or reduction in the amount of carrier gases used (see paragraph 0032). Consequently, although Eidelman is directed to a detonation spray coating process, and not the cold gas spraying process of Amateau, we agree with the examiner that

one of ordinary skill in the art would have found it obvious to perform the cold gas spraying process of Amateau under the claimed vacuum conditions.

While appellants emphasize operational differences between the cold gas spraying process of Amateau and the detonation process of Eidelman, Eidelman expressly teaches that a problem encountered by another conventional continuous spraying process, turbulent gas flow in the vicinity of the substrate surface, is ameliorated. Hence, we agree with the examiner that Eidelman would have suggested to one of ordinary skill in the art that problematic turbulent gas flow at the substrate surface can be reduced by using vacuum conditions in a variety of spray processes, including detonation processes, as well as convention HVOF and cold gas spraying processes. Also, we are convinced that one of ordinary skill in the art would have readily appreciated that operating at reduced pressure would save on the amount of carrier gas needed for detonation, HVOF and cold gas spraying processes. Furthermore, appellants have not informed us of any reason why one of ordinary skill in the art would not have reasonably expected that the advantages disclosed by Eidelman for using vacuum conditions would not translate to cold gas spraying processes.

As a final point, we note that appellants base no argument on objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the prima facie case of obviousness established by the examiner.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

EDWARD C. KIMLIN Administrative Patent Judge	)	
CHARLES F. WARREN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
THOMAS A. WALTZ Administrative Patent Judge	)	

ECK/hh

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